IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of	)
	)
Johan K. Fremerey	) Art Unit: 2832
	)
Serial No. **10/565,203**	) Examiner: Mohamad Musleh
	)
Filed: **May 22, 2006**	)Confirmation No. 9283
	)
Title: **MAGNETIC BEARING ELEMENT**	) Attorney Docket No: 26202.460
	)

Mail Stop: Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPELLANT'S APPEAL BRIEF

Dear Sir:

Applicant respectfully requests consideration of this brief on appeal filed pursuant to 37 C.F.R. § 41.37. This brief is accompanied by the fee set forth in § 41.20(b)(2).

A Notice of Appeal was filed on December 23, 2009. Filed herewith is a petition for 1-month extension to extend the due date for filing this Appeal Brief to March 23, 2010. Should the petition or charge authorization be missing, please accept this paper as a petition and charge any fees due in connection with this appeal to our Deposit Account No. 50-0548, and notify the undersigned.

This Appeal responds to the November 6, 2009, final rejection of claims 1 and 3-13.

If any additional fees are required or if the enclosed payment is insufficient, Appellant requests that the required fees be charged to our Deposit Account No. 50-0548, and notify the undersigned.

I. REAL PARTY IN INTEREST

The real party in interest is Forschungszentrum Julich Gmbh by assignment recorded in the U.S. Patent & Trademark Office on May 23, 2006, at Reel 017658, Frame 0082.

II. RELATED APPEALS AND INTERFERENCES

There are no other prior and pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 and 3-13 are pending, stand rejected, and are being appealed. Claim 2 has been canceled.

IV. STATUS OF AMENDMENTS

No amendments are currently pending or have been filed subsequent to the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Independent Claim 1

Claim 1 is directed to a magnetic bearing element. The bearing element comprises an annular permanent magnet that is divided in a circumferential direction in at least one location. Specification, page 4, lines 9-14; Figure 1. This division forms a radially extending slit which is defined by opposing faces of the magnet. *Id.* The opposing faces of the magnet are not in

contact with each other. *Id.* An annular binding band surrounds, is engaged with, and exerts a preloading force on the annular permanent magnet. Specification, page 4, lines 14-17; Figure 1.

B. Independent Claim 8

Claim 8 is directed to a magnetic bearing element. The bearing element comprises a hub and an annular magnet mounted on the hub. Specification, page 4, lines 9-14; Figure 1. The annular magnet is divided in a circumferential direction in at least one location. *Id.* This division forms a radially extending slit which is defined by opposing faces of the magnet. *Id.* The opposing faces of the magnet are not in contact with each other. *Id.* An annular binding band surrounds and is engaged with the magnet. Specification, page 4, lines 14-17; Figure 1. The annular binding band exerts an inwardly directed radial force preloading the annular magnets. *Id.*

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether the Examiner correctly applied the law to the facts in concluding that claims 1, 3-6, and 8-12 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by Pinkerton, U.S. Patent No. 5,302,874 (hereinafter Pinkerton).

2. Whether the Examiner correctly found the necessary facts and applied the law of obviousness in concluding that claims 7 and 13 are unpatentable under 35 U.S.C. § 103(a) over Pinkerton in view of Koenig, U.S. Patent No. 6,250,577(hereinafter "Koenig").

VII. ARGUMENT

Anticipation requires each and every limitation of a claim to be found expressly or inherently in a single prior art reference. *See Celeritas Technologies v. Rockwell Intern*, 150 F.3d 1354, 1361 (Fed. Cir. 1998). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

Obviousness is a conclusion of law based on underlying findings of fact. *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). If the underlying findings of fact are erroneous, the legal conclusion cannot stand. "In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant." *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993).

"It is to the claims which particularly point out what the inventor regards as his invention that one must look, and each claim must be considered separately." *Stiftung v. Renishaw PLC*, 20 USPQ2d 1094, 1101 (Fed. Cir. 1991); see also *In re Beaver*, 13 USPQ2d 1409, (Fed. Cir. 1989).

Appellant asserts that the Examiner has improperly rejected claims 1, 3-6 and 8-12 as being anticipated by Pinkerton and that the Examiner has failed to set forth a prima facia case of obviousness for claims 7 and 13 and, if a pima facie case was made out, has it been rebutted by Appellant.

A. Claim 1

Claim 1 includes an annular binding band surrounding a divided annular magnet. The annular binding band is engaged with the annular magnet. The annular binding band exerts a preloading force on the annular magnet. Pinkerton, however, fails to disclose an annular binding band or a binding band engaged with an annular magnet, and makes no reference to any component exerting a preloading force on an annular magnet. While the Examiner attempts to find elements of Pinkerton that make up the binding band, he fails to point out specifically where Pinkerton discloses the preloading force and has made only a conclusory statement as to its presence.

The Examiner initially asserted that the housing 12 of Pinkerton is an annular binding band that surrounds, is engaged with, and exerts a preloading force on annular magnets 38, 40. When it was pointed out that the housing 12 does not contact the magnets 38, 40, the Examiner attempted to clarify his position by asserting that "the element 12 is engaged to elements 38 and 40 through elements 14 and 34, so elements [12, 14, 34, 38, and 40] are engaged with each other by force means to keep them connected." Final Office Action, November 6, 2009, page 4. Even if the Examiner's attempt to transform and combine a number of distinct elements to read on the annular binding band of claim 1 into Pinkerton were appropriate, his facts and argument still fall short.

Pinkerton discloses a "housing with a cylindrical body 12 and annular end walls 14." Pinkereton, col. 8, lines 27-28. Pinkerton's "housing" is not a binding band, but a container disposed around the assembly to enclose it. This position is not only supported by the specification, but also by Figures 5, 7, and 8 which show that the housing 12 is completely separate from any magnets. Thus the housing cannot meet all the limitations of claim 1.

Additionally, elements 14 and 34, either alone or in connection with housing 12, do not meet the binding band limitation of claim 1. As mentioned above, element 14 in Pinkerton is the end wall of the housing 12. Pinkerton, col. 8, lines 27-28. Like the housing 12, the end wall 14 is neither a binding band nor engaged with the magnets.

The Examiner asserts that element 34 should be considered part of the binding band. This element, however, is part of the magnet. Pinkerton, col. 8, lines 45-48. "[E]ach magnet 26 includes a base 34, an outer magnet piece 38, and an inner magnet piece 40." Pinkerton, col. 8, lines 55-57. This position is further supported by Figure 7, which shows the base 34 being divided in accordance with the magnets. Thus, the base portions are part of the magnet, as described by Pinkerton, and not a binding band as required by the claim. Even if the base portions were considered separate from the magnet, they are positioned on the outer end of the magnets and segmented along with the magnets, and therefore could not be considered a binding band. Further, there is still absolutely no mention in Pinkerton of the base portions, or any other element, exerting a preloading force on the magnets as further required by the claim. Pinkerton further discloses that the housing is formed from aluminum, a metal. As such, the housing is not flexible and therefore is incapable of creating a preloading force on the magnets. See Pinkerton, col. 8, lines 27-29.

Pinkerton describes support pieces 32 as being made of nonmagnetic material which support the magnets. Pinkerton, col. 8, lines 42-45. While these elements are engaged with the magnets as best shown in Figures 5, 7, and 8, they cannot be considered binding bands for the same reasons as discussed above in relation to the base portions 34. The support pieces contact the magnets on the outer end, and thus are not a binding band as know in the art and described by

the present application. Additionally, there is no mention of the support pieces exerting a preloading force on the magnets as required by claim 1.

Accordingly, Pinkerton fails to disclose all the limitations of claim 1. Pinkerton does not show a binding band as required by the claim. The Examiner's attempt to combine a housing, an end wall, and a magnetic base still fails to account for a binding band, a binding band engaged with a annular magnet, or a binding band engaged with and exerting a preloading force on the magnet. Anticipation requires that not only all the elements of the claim be met, but that the "elements must be arranged as in the claims under review. . ." *In Re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). It would require a complete rearrangement for the numerous elements described by the Examiner to be considered a "binding band." This rearrangement would have to include not just the function and position of each element relied upon by the Examiner, but a complete structural change of the overall device. Pinkerton does not even begin to contemplate such a rearrangement.

Without such a rearrangement, one would have to inappropriately distort the meaning of a binding band. It is well defined that during examination, claims in an application are to be given their broadest reasonable interpretation, however, this interpretation must be consistent with the specification. *See In Re Sneed*, 710 F.2d 1544, 1548 (Fed. Cir. 1983). "[C]laim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *Id.* To find that any element disclosed in Pinkerton is a binding band as required by the claim would be to take the term "binding band" beyond the bounds of both what one of ordinary skill in the art would understand it to mean and beyond what is described in the specification. What's more, to find that any of the elements in Pinkerton exert a preloading force on the magnets as required by the claim would be to read something into the specification of

Pinkerton which is totally absent. The examiner fails to explain how an aluminum cylinder separated from the interiorly disposed magnets can exert a preloading force on those magnets. It is not in contact with them and aluminum is not resilient.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 1.

B. Claim 3

Claim 3 is dependent from claim 1. Appellant respectfully submits that the rejection to claim 3 should be reversed for all of the reasons set forth above in Section VII.A., which is incorporated herein by reference, and for the following additional reasons.

Claim 3 requires that a permanent magnet be divided in a circumferential direction at multiple locations to form radially extending slits. These slits separate the magnet into a plurality of spaced apart segments, which are not in contact with adjacent segments.

Pinkerton does not disclose a divided permanent magnet, but a plurality of individual magnetic elements. Pinkerton discloses "a plurality of magnet means each of which creates two magnetic fields F1 and F2 which have oppositely directed lines of flux." Col. 6, lines 15-17. This is achieved by a horseshoe magnet. *Id.* It is further described that "[e]ach magnet includes a ferromagnetic base 34, 35, 36 and two rare earth magnet pieces 38, 40, 42, 44 adhesively boded thereto, thus forming a horseshoe magnet which has its north and south poles positioned in a same circumferential position of the prescribed circular path of the reacting loops 22, 24. Col. 8, lines 45-50. Thus, Pinkerton discloses individual permanent magnets, not a divided permanent magnet as required by the claim.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 3 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 3.

C. Claim 4

Claim 4 is dependent from claim 3. Appellant respectfully submits that the rejection to claim 4 should be reversed for all of the reasons set forth above in Sections VII.A. and VII.B, which are incorporated herein by reference, and for the following additional reasons.

Claim 4 requires that the permanent magnet be divided at locations which are regularly distributed around the periphery of the magnet. As mentioned above, Pinkerton discloses a plurality of individual magnets and does not teach a single divided magnet. Thus, Pinkerton fails to disclose a magnet divided at locations which are regularly distributed as required by claim 4.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 4 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 4.

D. Claim 5

Claim 5 is dependent from claim 1. Appellant respectfully submits that the rejection to claim 5 should be reversed for all of the reasons set forth above in Section VII.A., which is incorporated herein by reference, and for the following additional reasons.

Claim 5 requires the bearing element to have multiple permanent magnets arranged concentrically with one another which are divided at at least one location and spaced apart there. The Examiner asserts that Pinkerton discloses this element by having permanent magnets 38/40 arranged concentrically. *Final Office Action*, page 3.

Pinkerton, however, does not disclose two separate magnetic elements, but a plurality of arrayed horseshoe-shaped magnets. Col. 8, lines 45-48. Pinkerton describes these magnets as having "outer magnet piece 38, and inner magnet piece 40" of individual magnets 26. *Id.*, lines 55-57. This position is further supported by the fact that the outer and inner portions of the magnet shown in Figures 7 and 8 have alternating N/S poles. If the Examiner's position was to be accepted, and the outer and inner magnetic elements were considered as separate magnets, it would require each magnet to have only a single pole, which is physically impossible.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 5 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 5.

E. Claim 6

Claim 6 is dependent from claim 5. Appellant respectfully submits that the rejection to claim 6 should be reversed for all of the reasons set forth above in Sections VII.A. and VII.F, which is incorporated herein by reference, and for the following additional reasons.

Claim 6 requires that the radially extending slits of the concentric permanent magnets are radially offset from each other. This is shown in Figure 1, where the inner magnetic element has slits at 0, 90, 180, and 270 degrees, while the outer magnetic element has slits at 45, 135, 225, and 315 degrees.

The Examiner asserts that this limitation is shown in Figure 7 of Pinkerton, where the segment between the elements 38 and 40 is offset from the radially extending slit of the other. *Final Office Action*, page 3. The Examiner states that this limitation is met because offset could mean "an agent, element, or thing that balances, counteracts, or compensates for something

else." *Id.* The Examiner, however, fails to indicate exactly what is either balancing, counteracting, or compensating for what.

It should be noted that after the filing of the Notice of Appeal, the Examiner contacted the Applicant and took the position that claim 6 was allowable, and that an Examiner's amendment could be filed incorporating claims 5 and 6 into claim 1, making the case allowable and this appeal unnecessary. Therefore, the Examiner has admitted that his initial position was in error and that the limitations of claim 6 are not disclosed by the cited references. Though the Examiner's suggestion was agreed to, the Examiner later rescinded his offer. The Examiner failed to indicate exactly how or to further qualify the prior rejection.

Nevertheless, Pinkerton fails to disclose the limitations of claim 6. As discussed above, Pinkerton does not disclose concentric magnets, but a plurality of individual horseshoe shaped magnets. Also, the slits or divisions between each magnet in Pinkerton are shown aligned with one another, not offset as required by the claim. Though the Examiner has attempted to interpret the "offset" limitation broadly, he makes only conclusory statements to elements and balancing without expressly setting forth how these limitations are met by Pinkerton. Moreover, though the limitations in a claim are to be given their broadest reasonable interpretation, this interpretation must be consistent with the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 1995). The specification of the present application describes the term offset to mean "the locations at which the permanent magnets are divided are advantageously offset from one another in the circumferential direction." Specification, page 3, lines 24-26. Thus, in light of the specification, the term offset should be interpreted as the slits of the magnetic are not aligned in the circumferential direction. Regardless of the interpretation, however, Pinkerton neither teaches nor suggests such a limitation.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 6 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 6.

F. Claim 7

Claim 7 is dependent from claim 1. Appellant respectfully submits that the rejection to claim 7 should be reversed for all of the reasons set forth above in Sections VII.A., which is incorporated herein by reference, and for the following additional reasons.

Claim 7 requires that the binding band be made from a carbon-fiber material. The Examiner asserts that Koenig teaches that it is known to use carbon-fiber material as an insert or a binding band, and that one of ordinary skill in the art would have found it obvious to modify Pinkerton in light of Koenig to achieve the limitations of claim 7.

Koenig, however, discloses only self-lubricating inserts for a bearing surface. These inserts protrude above the bearing cylinder, providing a plurality of outer bearing surfaces. *Koenig*, col. 6, lines 2-6. The material for these inserts is disclosed as a reinforced carbon-fiber filled with resin. *Id.*, lines 7-10. Contrary to the Examiner's position, Koenig makes no mention of a binding band. The inserts disclosed in Koenig are not binding bands, and because Pinkerton also fails to disclose a binding band as set forth above, a combination of these two references fails to disclose a binding band as required by the claims.

The Examiner has also stated that it is within the general skill of one in the art to select a known material based on its suitability for intended use as a matter of obvious design choice. The use of carbon-fiber material as set forth in claim 7, however, takes advantage of the material properties of carbon-fiber for an intended use not disclosed in the cited references or known by those skilled in the art prior to the filing of this application. The carbon-fiber material is used by

Appellant for its high tensile strength and its ability to exert a preloading force on the magnet. This intended use is neither taught nor suggested by the cited references, making the Examiner's design choice rejection improper.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Pinkerton in view of Koenig is improper. Appellant requests the reversal of the rejection to claim 7.

G. Claim 8

Claim 8 requires a divided annular magnet mounted on a hub, and an annular binding band surrounding the annular magnet. The annular binding band is engaged with the annular magnet. The annular binding band exerts an inwardly directed radial force preloading the annular magnet. Pinkerton, however, fails to disclose an annular binding band or a binding band engaged with an annular magnet, and makes no reference of any component exerting a preloading force, let alone an inwardly directed radial force.

Claim 8 contains a number of the same limitations as claim 1. Accordingly, the rejection to claim 8 should be reversed for all of the reasons set forth above in Section VII.A., which is incorporated herein by reference, and for the following additional reasons.

Claim 8 provides the further limitation that the binding band exerts an inwardly directed radial preloading force to the annular magnet. As discussed above, the Examiner has failed to point out where Pinkerton discloses this preloading force and has made only conclusory statements as to its existence. Also, as discussed above, the aluminum housing is incapable of exerting the claimed preloading force.

As disclosed in Pinkerton and shown in Figures 5, and 7, the radial bearings have only empty space surrounding the outer circumference of the magnets 26. Pinkerton, col. 8, lines 55-

57. The axial bearings have magnets 28, 29 formed partially of a base portion 35, 36. *Id.* at 57-60. As noted above, these base portions are part of the magnets, not a separate binding band. This position is supported by the fact that the base portions are segmented along with the magnet. Even if one were to argue that these base portions are a binding band, it would be impossible for them to exert an inwardly directed radial preloading force because they do not surround the circumference of the magnets 28, 29.

In view of the arguments above, Appellant respectfully submits that the Examiner's rejection of claim 8 under 35 U.S.C. § 102(b) as being anticipated by Pinkerton is improper. Appellant requests the reversal of the rejection to claim 8.

H. Claim 9

Claim 9 is intended to be dependent from claim 8 and sets forth similar additional limitations as recited in claim 3. Thus, Appellant respectfully submits that the rejection to claim 9 should be reversed for all of the reasons set forth above in Sections VII.G and VII.B., which are incorporated herein by reference. Appellant respectfully requests the reversal of the rejection to claim 9.

I. Claim 10

Claim 10 is intended to be dependent from claim 9 and sets forth similar additional limitations as recited in claim 4. Thus, Appellant respectfully submits that the rejection to claim 9 should be reversed for all of the reasons set forth above in Sections VII.G and VII.C., which are incorporated herein by reference. Appellant respectfully requests the reversal of the rejection to claim 10.

J. Claim 11

Claim 11 is dependent from claim 9 and sets forth similar additional limitations as recited in claim 5. Thus, Appellant respectfully submits that the rejection to claim 11 should be reversed for all of the reasons set forth above in Sections VII.G and VII.D., which are incorporated herein by reference. Appellant respectfully requests the reversal of the rejection to claim 11.

K. Claim 12

Claim 12 is dependent from claim 11 and sets forth similar additional limitations as recited in claim 6. Thus, Appellant respectfully submits that the rejection to claim 9 should be reversed for all of the reasons set forth above in Sections VII.G and VII.E., which are incorporated herein by reference. Appellant respectfully requests the reversal of the rejection to claim 12.

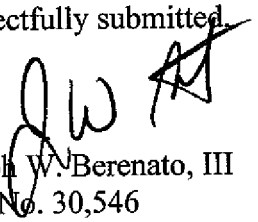
L. Claim 13

Claim 13 is dependent from claim 9 and sets forth similar additional limitations as recited in claim 7. Thus, Appellant respectfully submits that the rejection to claim 13 should be reversed for all of the reasons set forth above in Sections VII.G and VII.F., which are incorporated herein by reference. Appellant respectfully requests the reversal of the rejection to claim 13.

VIII. CONCLUSION

For the reasons given above, pending claims 1 and 3-13 are allowable and reversal of the Examiner's rejections are respectfully requested.

Respectfully submitted,



Joseph W. Berenato, III
Reg. No. 30,546
Attorney for Appellant

Berenato & White, LLC
6550 Rock Spring Drive, Suite 240
Bethesda, Maryland 20817
Telephone: (301) 896-0600
Facsimile: (301) 896-0607

CLAIMS APPENDIX

1. A magnetic bearing element comprising:

an annular permanent magnet divided in a circumferential direction thereof at at least one location to form a radially extending slit, the radially extending slit defined by opposing faces of the magnet; and

an annular binding band surrounding, engaged with, and exerting a preloading force on said annular permanent magnet,

wherein the opposing faces of the magnet are not in contact with each other.

2. Canceled

3. The magnetic bearing element according to claim 1, wherein the permanent magnet is divided in a circumferential direction thereof at multiple locations to form multiple radially extend extending slits and a plurality of space apart segments and the plurality of spaced apart segments are not in contact with adjacent segments.

4. The magnetic bearing element according to claim 3, wherein the locations are distributed regularly around a periphery of the permanent magnet.

5. The magnetic bearing element according to claim 1, wherein the bearing element comprises multiple permanent magnets arranged concentrically with one another, all of which are divided at at least one location and spaced apart there.

6. The magnetic bearing element according to claim 5, wherein the radially extending slit of one of the multiple permanent magnets is offset from the radially extending slot of another one of the multiple permanent magnets in the circumferential direction.

7. The magnetic bearing element according to claim 1, wherein the annular band is made from carbon-fiber material.

8. A magnetic bearing clement comprising:

a hub;

an annular magnet mounted on said hub and divided in a circumferential direction in at least one location to form a radially extending slit defined by opposing faces of the magnet; and

an annular binding band surrounding and engaged with said annular magnet, said annular binding band exerting an inwardly directed radial force preloading said annular magnet,

wherein the opposing faces of the annular magnet are not in contact with each other.

9. The magnetic bearing element according to claim 9, wherein the permanent magnet is divided in a circumferential direction thereof at multiple locations to form multiple radially extending slits and a plurality of space apart segments and the plurality of spaced apart segments are not in contact with adjacent segments.

10. The magnetic bearing element according to claim 10, wherein the locations are distributed regularly around a periphery of the permanent magnet.

11. The magnetic bearing element according to claim 9, wherein the bearing element comprises multiple permanent magnets arranged concentrically with one another, all of which are divided at at least one location and spaced apart there.

12. The magnetic bearing element according to claim 11, wherein the radially extending slit of one of the multiple permanent magnets is offset from the radially extending slot of another one of the multiple permanent magnets in the circumferential direction.

13. The magnetic bearing element according to claim 9, wherein the annular band is made from carbon-fiber material.

EVIDENCE APPENDIX

There is no evidence being relied upon by appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

There are no decisions regarding related proceedings for submission in the related proceedings appendix.